

**WHAT IS CLAIMED IS:**

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1. An auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:  
a light source; and  
a light directing member for directing incident light from the light source toward the reflector, the directing member including,  
a lower surface having a plurality of convex portions extending from the lower surface, each of the convex portions having a substantially planar surface which is substantially parallel to the lower surface.

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2. The device according to claim 1, further comprising:  
a light reflecting member to guide light from the light source into the light directing member.

3. The device according to claim 1, wherein a spacing between the convex portions decreases with increasing distance from the light source.

4. The device according to claim 3, wherein the spacing between adjacent convex portions of the lower surface of the light directing member is in a range of 10 $\mu$ m to 1000 $\mu$ m.

5. The device according to claim 1, wherein an angle between the lower surface and a surface connecting the planar surface of the convex portion is in a range of 90° to 100°.

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6. The device according to claim 1, wherein the planar surface of each convex portion has a circular shape.

7. The device according to claim 1, wherein the planar surface of each convex portion has a rectangular shape.

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8. The device according to claim 1, wherein the plane surface of the plurality of convex portions has a bar shape extending perpendicular to a direction of light propagation in the light directing member.

9. The device according to claim 1, wherein a distance between the lower surface and the planar surface of the each convex portion is less than 50 $\mu$ m.

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10. A reflective liquid crystal display device, comprising:  
a display panel including two substrates spaced apart, liquid crystal sandwiched between the two substrates, and a reflector to reflect light through the liquid crystal; and  
an auxiliary light source device for supplying light to the display panel, including,

a light source,

a light directing member for directing incident light from the light source toward the display panel, the directing member having a lower surface having a plurality of convex portions, each having a substantially planar surface which is substantially parallel to the lower surface, and

a light reflecting member which guides light from the light source into the light directing member.

11. An auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

an upper reflective surface to reflect impinging light above a certain incidence angle;

a lower reflective surface having a plurality of convex portions extending toward the reflector to direct light from the auxiliary light source device to the reflector; and

an entry surface connecting the upper and lower reflective surfaces through which light from a light source enters.

12. The device according to claim 11, wherein each convex portion includes a planar portion and sides connecting the planar portion with the lower reflective surface.

13. The device according to claim 12, wherein an angle between the lower surface and the sides is in a range of  $90^\circ$  to  $100^\circ$ .

14. The device according to claim 13, wherein the planar portion is substantially parallel to the lower surface.

15. The device according to claim 11, wherein a cross section of each convex portion is substantially circular.

16. The device according to claim 11, wherein a cross section of each convex portion is rectangular.

17. The device according to claim 11, wherein each convex portion extends along substantially an entire width of the reflective liquid crystal display device.

18. The device according to claim 11, wherein the plurality of convex portions are spaced along the lower surface to ensure a uniform distribution of light along a length of the device.

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19. The device according to claim 18, wherein the plurality of convex portions are spaced closer together with increasing distance from the entry surface.

20. The device according to claim 19, wherein a spacing between adjacent convex portions is in a range of  $10\mu\text{m}$  to  $1000\mu\text{m}$ .

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21. An auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

a light source extending along a width of the reflector, to emit light along a length of the reflector; and

a light directing device located above the reflector and adjacent to the light source to direct light from the light source to the reflector such that a light distribution of the directed light is substantially uniform along the length of the reflector, and such that the directed light is substantially perpendicular to the reflector.

22. The device according to claim 21, wherein the light directing device includes a plurality of portions extending toward the reflector, a spacing between the portions decreasing along the length of the reflector with increasing distance from the light source.

23. The device according to claim 22, wherein the spacing between adjacent portions is in a range of  $10\mu\text{m}$  to  $1000\mu\text{m}$  and a width of each portion is less than  $100\mu\text{m}$ .

24. The device according to claim 22, wherein each of the plurality of portions includes a planar surface parallel to a lower surface of the light

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